

## **Laser Cutter FAQ:**

*What materials can the XTool Laser Cutter work with?*

The XTool laser cutter at the RHPL Makerspace can work with a variety of materials for cutting, scoring and engraving. These include Wood, Rubber, Cardboard and Metal. For a full list of compatible materials we recommend checking <https://www.xtool.com/pages/material-settings> and looking at the table for the "XTool P2".

*What materials cannot be used with the XTool at the RHPL Makerspace?*

We do not cut leather, ABS plastic, PVB resins, or PVC plastic on the XTool P2 here at the Makerspace. We cannot engrave on non-stick (Teflon) Cookware or any other product containing PTFE. We will not allow anything that contains batteries or pyrotechnics (Laptops, Cell Phones, Flares, etc.) to be placed inside the machine. Knives larger than 3 inches are not allowed in the library at all and won't be engraved. We will not allow the machine to be used on human flesh, living or deceased.

Note: The staff at the RHPL Makerspace reserve the right to refuse the use of any material with the laser cutter if we determine it to be a hazard to the machine or the people using it.

*How large of objects can fit in the XTool at the RHPL Makerspace?*

The Xtool P2 can accommodate a maximum object size of 25" W x 12" L x 8" H, but the maximum cuttable/engrivable area is 21.5" W x 11" H. Cut depth will depend on the material, we again recommend consulting the above material settings chart.

*What accessories do you have available for the XTool P2?*

In addition to the XTool P2 itself, we also have the accessory Conveyor Feeder and Rotary Tool. The Conveyor Feeder allows much longer materials to be cut in the machine, with a maximum width of 19", maximum length of 10 feet and a thickness of ½". The Rotary Tool allows the engraving of cylindrical objects like rods, mugs, tumblers, glasses, etc.

*Can I engrave on my Engagement Ring, Grandmother's Antique Vase, etc?*

The staff at the RHPL Makerspace strongly discourages engraving or cutting on items that are of high value or irreplaceable, though the decision is ultimately up to you. We are not responsible for any damage that may occur or if the cut/engrave is not successful.

*What software is used with the XTool P2?*

We utilize XTool Creative Space here at the RHPL Makerspace, this software is free and can be downloaded here: <https://www.xtool.com/pages/software> if you would like to work on a project in advance or gain familiarity with it.

*Can I use LightBurn software with your XTool P2?*

Currently, LightBurn does not support the camera, auto-focus, and framing functions on the XTool P2. As such we will not be using any other software with this machine.

*How long will it take to laser cut/score/engrave my item?*

We cannot be exact due to the amount of time required varying based on the size of the cut/score/engrave pattern and its complexity. However, cut and score operations will take the shortest amount of time with engravings of complex scenes taking the most time. Complex engravings approaching the maximum size of the bed of the machine (11"x 21.5") may approach or exceed several hours long.

### **3D Printer FAQ:**

*How do I design my own 3D prints?*

[Watch this video](#) on general design for 3D printing and to learn a bit more about the 3D printing process. [Watch this video](#) to learn how to design 3D objects for 3D printing in the free online program, Tinkercad.

*What kinds of 3D printers are available at the RHPL makerspace?*

We have two kinds of 3D printers at the makerspace, a 3D filament (FDM) printer and a 3D resin (SLA) printer. Our filament printer prioritizes speed and cost efficiency, as well as offers multiple color options. Our resin printer prioritizes accuracy and extremely fine detail while being slower and having slightly higher material costs.

*Which printer is better for my project?*

Generally speaking, the filament (FDM) printer is better for functional prints or items that do not require extremely fine detail, while the resin printer should be primarily used for items with fine details like miniature character or scenic models. Please note we will **only resin print models** that are **presupported**. The staff on the makerspace would be happy to advise which method may be better for your particular project and timeframe. Please email us or make an appointment for our consultation.

*What colors can I print in?*

For our filament (FDM) printer, we normally keep a decent selection of colors on hand including the three primary (red, yellow, blue) and three secondary colors (orange, green, violet), as well as black, brown, gray and some specially filament like translucent clear, glow in the dark green and food safe PLA.

For our resin printer, we only utilize gray resin to economize the use of resin for all of our patrons, models would need to be painted afterwards if different colors are desired.

*Can you print in different types of filament on the FDM printer? (ABS, ASA, PETG, etc.)*

In order to minimize our environmental impact and ensure the safety and comfort of the patrons and staff at the makerspace, we only use PLA (Polylactic Acid) filament due to it being made from natural resources such as sugar cane or cornstarch.

*How large of an object can I print?*

Our filament (FDM) printer can accommodate a maximum object size of 10" x 10" x 10". Our resin printer can accommodate a maximum object size of 6.5" x 11.7" x 13". Larger items can be broken up into smaller pieces and printed individually, but this will increase the time and cost involved.

*How long will it take to print my object?*

Due to the 3D printers at the RHPL makerspace being in use by multiple patrons, we operate on a FIFO (first in first out) queue basis. Once we have your 3D design in hand we will put you in the queue and seek to get as many prints as possible done in the shortest amount of time. This means that although it may only take a few hours to print your object, expect the average turnaround to be approximately one week.

*What is the cost involved for 3D printing?*

We only charge for materials cost, so the cost per item printed is based on the weight of the filament or resin consumed. For filament (FDM) prints, the cost is 3 cents per gram (85 cents per ounce). For resin prints, the cost is 5 cents per gram (\$1.42 per ounce).

*Where can I find 3D designs to print?*

3D printing can be a fun and creative resource, but 3D design can be intimidating. If you are not experienced with 3D design, we recommend consulting an online 3D repository such as thingiverse.com or STLflic (the latter we maintain a subscription for). The site to view the library on STLflic is platform.stlflic.com. You won't be able to download the files, but you can get an idea for what they have.

*Is there anything I cannot 3D print?*

We do not allow the printing of functional weapons or their components at the makerspace. We also not allow the printing of designs that display or insinuate violence or intimidation towards others or constitute Nazi paraphernalia. Final discretion is left up to the staff at the RHPL makerspace.

*Do you offer classes on 3D printing?*

We interpret this as asking if we offer a class in either the hardware of our current machine (Bambu X1 Carbon) or 3D modeling. We do not offer classes in either but recommend youtube for searching for 3D modeling courses. For beginners, we recommend: [https://youtu.be/gOs6Mdj7y\\_4?si=T7FM9TJgsOoe\\_8do](https://youtu.be/gOs6Mdj7y_4?si=T7FM9TJgsOoe_8do)

### **3D Scanner FAQ:**

*What resources for 3D scanning are available at the makerspace?*

Here at the RHPL makerspace we maintain a RevoScan Pop 3 scanner, accessories and software for patron use.

*What are the limitations of the 3D scanner?*

The scanner we have is optimized for items about the size of a soda can. Larger items can be worked around in pieces, but it is not ideal for small items such as chess pieces or figurines. Light or white colored items work best. We will attempt to help you get the best 3D scan possible of your object, but cannot guarantee that we can generate a model that will be printable or usable for your purposes.

### **Format Conversion FAQ:**

*What kinds of analog formats can I digitize at the RHPL makerspace?*

Here at the RHPL makerspace we maintain equipment to digitize many analog formats. These include:

- VHS Tapes
- DVDs
- VHS-8mm
- 8mm Motion Picture
- Super 8mm Motion Picture
- 78, 45, 33 and 16 RPM audio records.
- 135 (35mm) B&W Negative, Color Negative and Color Positive (slide) films
- 110 Color Negatives and Color Positive (slide) films
- 126 Instamatic Color Negatives and Color Positive (slide) films
- 3.5 inch floppy disks

*What file formats will my digitized items be in?*

Motion picture or video will be converted to .MP4 files, still images will be converted to .JPEG files.

*What storage format should be utilized for the digital file?*

For 8mm, Super 8mm and still film conversions we recommend bringing a SD card. For everything else a USB flash drive is preferred, although we can accommodate either or put your files onto a DVD if desired. We have flash drives and DVDs available for purchase at a modest cost if desired.

### **Die Cutter FAQ:**

*What resources are available for die cutting at the RHPL makerspace?*

We maintain a roller die cutter and an assortment of dies at the makerspace for patron use.

*What materials can be die cut?*

The die cutter can be used for paper, cardstock and some

### **Sublimation FAQ:**

*What materials can be sublimated?*

Only specially coated materials can be sublimated on. We have noticed a few distributors online claim their products are able to be sublimated on when this isn't the truth. If you ever have any questions, please email [makerspace@rhpl.org](mailto:makerspace@rhpl.org).

*What sublimation materials do you keep in stock?*

The only sublimation material we keep in stock is 11oz mugs. Due to slower turn around time for these products, you may only buy one or two from the makerspace. If you want to do more, please email [makerspace@rhpl.org](mailto:makerspace@rhpl.org) and we will send you a link to buy your own.

*What fabric can I bring in to sublimate on?*

White 100% polyester fabric results in the best quality of sublimation transfer. Lesser amounts of polyester in the material (or lighter colors that aren't white) lead to lower quality transfers - the colors are a bit faded. Dark colored fabric cannot be sublimated on.

*What file format do I need?*

You can bring in any image format but we have found it useful to just have jpeg, jpg, or png. You may bring the image on a flashdrive or email it to [makerspace@rhpl.org](mailto:makerspace@rhpl.org) ahead of your appointment.